

REMARKS

The Examiner is thanked for the performance of a thorough search.

Claims 1-13, 15-39, 41-47, 49-62, 64-70, and 72 have been amended. Claims 48 and 71 have been canceled. No claims have been added. Hence, Claims 1-13, 15-39, 41-47, 49-62, 64-70, and 72 are pending in the present application.

The issues raised in the final Office Action mailed June 21, 2010 are addressed hereinafter.

I. SUMMARY OF TELEPHONE INTERVIEW

The Examiner is thanked for granting the courtesy of a telephone interview on September 7, 2010. Examiner Chea and Applicants' representative Stoycho D. Draganoff attended the interview. Claim 1 and proposed amendments thereof were discussed. The reference discussed was Cohen et al., U.S. Patent Application Publication No. US 2005/0193430 ("COHEN"). An agreement regarding patentability was not reached.

The Applicants' representative provided a brief overview of the subject matter to which Claim 1 is directed, and then pointed out the differences between Claim 1 and COHEN. The Examiner inquired how the proposed amendment to Claim 1 differs from the subject matter described in paragraph [0048] of COHEN. The Applicants' representative pointed out that in paragraph [0048] COHEN describes a system that checks some constraints against a starting point in a graph that represents a topology model of a network. Significantly, however, the constraints in COHEN are not ACLs; rather, the constraints appear to be directed to whether an attacker can gain access to a network node and whether a node has the ability to send or receive HTTP packets (e.g., as described in paragraphs [0032], [0075], and [0077] of COHEN. In contrast, Claim 1 features checking first information identifying a particular packet against an inbound ACL of a network device to determine whether ingress of the packet to the network

device is permitted and, if ingress is permitted, then checking the first information against the outbound ACL(s) of the network device to determine whether egress of the packet from the network device is permitted. Then, the same process is repeated for all neighbor network devices to which the particular packet is allowed to egress from the network node. The Examiner indicated that further consideration and/or search may be necessary when the discussed amendments to Claim 1 are officially submitted.

II. OBJECTIONS TO THE CLAIMS

Claims 49-62 and 64-70 were objected to because of an informality, namely, that one of skill in the art may interpret these claims to cover signals. To address this issue, the final Office Action suggested amending these claims to recite a “non-transitory computer-readable storage medium”. Claims 49-62 and 64-70 have been amended herein according to the suggestion in the final Office Action. For this reason, reconsideration and withdrawal of the objection to Claims 49-62 and 64-70 is respectfully requested.

III. ISSUES RELATING TO THE CITED ART

A. INDEPENDENT CLAIM 1

Claim 1 was rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over Cohen et al., U.S. Patent Application Publication No. US 2005/0193430 (“COHEN”) in view of Milliken et al., U.S. Patent No. 7,200,105 (“MILLIKEN”). The rejection is respectfully traversed.

Among other features, Claim 1 comprises:

...;

receiving first information that identifies a packet;

representing a possible travel of the packet in a network based on topology data and on security policy data;

wherein the step of representing comprises:

checking the first information against an inbound access control list (ACL), included in the security policy data, of an interface of a network device comprising a network entry point for the packet, wherein checking the first information against the inbound ACL includes determining whether the inbound ACL permits ingress of the packet at the

network device;
if the inbound ACL permits the ingress of the packet at the network device,
checking the first information against one or more outbound ACLs
for each outbound interface of the network device to determine one
or more possible outbound interfaces on which egress of the packet
is permitted from the network device;
...;
repeating the checking steps for each neighbor network device, of the one or
more neighbor network devices, **that is connected to each of the one or**
more possible outbound interfaces;
... .

The final Office Action asserts that the above features of Claim 1 are described in COHEN.

This assertion is incorrect.

As discussed during the telephone interview on September 7, 2010, COHEN does not describe any functionality that checks packet-identifying information against inbound Access Control Lists (ACLs) and outbound ACLs of network device interfaces for the purposes of determining the possible penetration of a packet in a network.

Rather, in paragraphs [0037]-[0048], COHEN describes the performance of an attack simulation. Specifically, in paragraphs [0038]-[0045], COHEN describes that an attack is simulated in part by evaluating constraints defined for all states of all services provided by network nodes, where a state of a service represents a result of an action performed on a network node. (See COHEN, paragraph [0032].) Significantly, however, the constraints evaluated in COHEN do not include ACLs associated with the interfaces of a network device. For example, in paragraph [0032] COHEN describes that a constraint may be associated with whether an attacker needs to gain knowledge of a management password or with whether a node has the ability to send HTTP packets to a web server. Further, in paragraph [0048] COHEN describes that a constraint may be associated with whether a node can receive HTTP packets, and in paragraph [0077] COHEN describes that a pre-condition for an attack may be whether a web server allows for buffer overflow. In the most telling example, paragraph

[0075] of COHEN describes a result table listing detected vulnerabilities along with the policy violations and the pre-conditions that are necessary to effectuate the vulnerabilities; however, the policy violations and the pre-conditions listed in this table do not describe or even suggest that ACLs associated with interfaces of a network device are used in determining the listed vulnerabilities.

In contrast, the above features of Claim 1 indicate the functionalities of: checking first information, which identifies a packet, against the inbound ACL of a network device interface (which is the entry point of the packet in the network) to determine whether the inbound ACL permits ingress of the packet at the network device; if the inbound ACL permits the ingress of the packet at the network device, then checking the first information against one or more outbound ACLs of the outbound interfaces of the network device to determine on which outbound interfaces egress of the packet is permitted from the network device; and repeating the checking steps for each neighbor network device that is connected to an outbound interface on which egress of the packet is permitted from the network device. Since COHEN does not describe any functionalities that use ACLs of network device interfaces to determine whether a particular packet can ingress into and egress from a given network device, COHEN does not describe the above features of Claim 1.

Finally, it is noted that MILLIKEN does not cure the deficiencies of COHEN with respect to the above features of Claim 1. The final Office Action does not assert and the Applicants could not find that MILLIKEN describes the above features of Claim 1. In fact, MILLIKEN does not even mention the terms “access control list” or “ACL”.

For the foregoing reasons COHEN and MILLIKEN, whether taken alone or in combination, do not describe or suggest all features of Claim 1. Thus, Claim 1 is patentable

under 35 U.S.C. § 103(a) over COHEN in view of MILLIKEN. Reconsideration and withdrawal of the rejection of Claim 1 is respectfully requested.

B. INDEPENDENT CLAIMS 22, 25-27, 49, AND 72

Claims 22, 25-27, 49, and 72 were rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over COHEN in view of MILLIKEN.

Claims 22, 25-27, 49, and 72 include features similar to the features of Claim 1 discussed above. For this reason, it is respectfully submitted that Claims 22, 25-27, 49, and 72 are patentable under 35 U.S.C. § 103(a) over COHEN in view of MILLIKEN for at least the reasons given above with respect to Claim 1. Reconsideration and withdrawal of the rejection of Claims 22, 25-27, 49, and 72 is respectfully requested.

C. DEPENDENT CLAIMS 2-13, 15-21, 23-24, 28-39, 41-47, 50-62, AND 64-70

Claims 2-13, 15-21, 23-24, 28-39, 41-47, 50-62, and 64-70 were rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over COHEN in view of MILLIKEN.

Each of Claims 2-13, 15-21, 23-24, 28-39, 41-47, 50-62, and 64-70 depends from one of independent Claims 1, 22, 27, and 49, and thus includes each and every feature of the independent base claim. Thus, each of Claims 2-13, 15-21, 23-24, 28-39, 41-47, 50-62, and 64-70 is allowable for at least the reasons given above for Claims 1, 22, 27, and 49. In addition, each of Claims 2-13, 15-21, 23-24, 28-39, 41-47, 50-62, and 64-70 introduces one or more additional features that independently render it patentable. However, due to the fundamental differences already identified, to expedite the positive resolution of this case a separate discussion of those features is not included at this time. Therefore, it is respectfully submitted that Claims 2-13, 15-21, 23-24, 28-39, 41-47, 50-62, and 64-70 are allowable for the reasons given above with respect to Claims 1, 22, 27, and 49. Reconsideration and withdrawal

of the rejection of Claims 2-13, 15-21, 23-24, 28-39, 41-47, 50-62, and 64-70 is respectfully requested.

IV. CONCLUSION

The Applicants believe that all issues raised in the final Office Action have been addressed. Further, for the reasons set forth above, the Applicants respectfully submit that allowance of the pending claims is appropriate. Entry of the RCE filed concurrently herewith and reconsideration of the present application are respectfully requested in light of the amendments and remarks herein.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

A petition for extension of time, to the extent necessary to make this reply timely filed, is hereby made. If any applicable fee is missing or insufficient, throughout the pendency of this application, the Commissioner is hereby authorized to charge any applicable fees and to credit any overpayments to our Deposit Account No. 50-1302.

Respectfully submitted,

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